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SPECIAL WOOD

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COVER: Young maple trees on a Quebec hillside.

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INSIDE

THE EDITOR'S COLUMN

PULPWOOD MARKETING BOARDS ARE ONLY THE BEGINNING

*Guest editorial by
Prof. J.D. MacArthur
Dept. of Woodlot
Management*

Pulpwood marketing boards have placed a powerful weapon in the hands of woodlot owners. They can now exercise the power of collective bargaining and deal with the giant industrial pulpwood purchasers much as labour unions do. Although they must conform to certain regulations the legal dice are loaded in their favour by Bill 13 of the Quebec Legislative Assembly. They can now bring down the old enemy a peg or two.

In the flush of victory, woodlot owners should not throw caution to the winds, however. Weapons that are new and powerful and work well are often dangerous unless handled with care and intelligence. Careless use may result in painful self-inflicted wounds — wounds that are not the fault of the weapon but a result of its misuse. Misuse can have the unhappy result of cancelling benefits obtained by proper use.

Pulpwood marketing boards for example could, by improving pulpwood prices, lead to an over-concentration on pulpwood production. Woodlots capable of more profitable production could be mistakenly cropped for pulpwood. Many small woodlots are ideally suited to produce high value wood products through intensive management. To devote such forests merely to pulpwood production, perhaps even to the extent of selling a sugar bush for hardwood pulp, could be a costly error. And once committed to pulpwood it would not be easy to get back to a more varied production.

Another danger is that of over-cutting in response to better prices. Over-cutting could easily reduce the productive capacity of the forest. While prices would be better owners would have less to sell and could possibly lose more than they gain. Here again considerable time would be required to recover the ground lost. Regarding proper cutting rates woodlot owners themselves would be the first to admit that they do not know what maximum normal production should be. It is not a simple figure to determine.

The foregoing is not a criticism of marketing boards but an attempt to suggest that they alone are not enough. Other assistance is needed. Marketing boards for other forest products, readily available and reliable management advice, and assistance to woodlot production comparable to that enjoyed by agriculture are needed and would be no more than the bare minimum. With a four-fold increase in demand for Canada's forest products predicted by the year 2000 pulpwood marketing boards are only the beginning. Much more must be done if the farm woodlot is to get its proper share of the new and growing markets for wood.

Professor J. D. MacArthur

A practical approach —

PRIVATE FOREST MANAGEMENT IN QUEBEC

By A.R.C. Jones

Nearly half of the annual wood harvest in the province of Quebec is cut from private lands, yet this area makes up less than a tenth of the total forest acreage in the province. To realize the greatest sustained returns for the various categories of private owners, three cutting methods are here proposed.

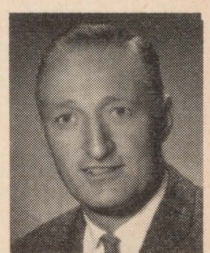
Private forests occupy about 10 per cent or just under 27,000 square miles of the vast extent (270,400 square miles) of commercial forest land in the province. Nevertheless, this tenth of the total forest land area produces never less than 25 per cent and frequently as much as 40 per cent of the total crop of forest products harvested annually. Obviously, this is an important contribution to the economy of Quebec in terms of the raw material supplied to forest industry. Moreover the vast array of owners holding private forests or farm woodlots in the province depend to a varying degree on the income received from the woodlot and maple harvests. This was reported to be nearly five per cent of all farm cash receipts in 1958 and does not include value of products used at home.

The complicated ownership pattern of these private forests can be briefly described as follows. Large private forests (in units greater than 2,000 acres) are largely held by industries such as pulp and paper, saw-mills and furniture manufacturers, the mining industry and others and involve approximately 100 ownerships totaling an area close to 9,000 square miles. Forest holdings less than 2,000 acres in size are the small private forests.

These lands are held by two large groups of owners, whose objectives for holding forest land are as widely divergent and as varied as their methods of "managing" them.

The suburban or non-farm owner

One of these groups, the non-farm or absentee owner, numbers nearly 100,000 and holds 10,000 square miles of forest land. It has been described by Kernan (1966), "The only things these owners have in common are the possession of a woodland and a preference for profits rather than losses. Their interests range from zero to casual to a passionate devotion to every tree; and the quality of their woods varies from useless and hopeless scrub to some of the finest to be found anywhere..." The majority are city dwellers caught up in the restless flight to the fringe and includes many seeking escape from the increasing complexities and pressures of living in a modern, urban environment. Their numbers have been increasing since the end of World War II. They are not generally interested in wood production by itself but in the services that their land holdings can provide in the way of undisturbed outdoor recreation, landscape protection and a quiet haven. These owners are practicing what has been called "suburban" or



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aesthetic forestry. Extension personnel and resource planners must consider the demands of this rapidly increasing group of owners, if timber production and outdoor recreation needs are to be placed in their proper perspective.

The farm owner

The second category of small forest owners, although covered by the definition farm woodlot owner, is almost as complex in occupational terms as the first. In Quebec there are approximately 75,000 farm woodlot owners holding approximately four and a half million acres of forest land. In 1951 the area held by these owners amounted to nearly 9,000 square miles. By 1961 this extent of farm forest had shrunk to less than 7,000 square miles in units averaging 60 acres in size. With this category of owner, wood production with the income therefrom is the economic tie that is of major importance. In fact, this latter group of owners, despite their diversity, can be classified in terms of their relative income position as demonstrated by their attitude and methods of woodlot management. The owners range from the marginal owner exploiting all his land resources to the limit (indicated in the woodlot by widespread clear cutting) to the other extreme — the commercial farmer operating a viable agricultural enterprise (who has little

Table : MANAGEMENT PRESCRIPTIONS

| Owner Class | Type of Forest | Product Objectives | Management Goals | Harvest System |
|-----------------|----------------------|--|-------------------|----------------------------------|
| Marginal farm | Pioneer ³ | Bulk products ¹ | immediate returns | strip clear-cut |
| Commercial farm | Intermediate | Bulk products ¹ and sawlogs | early returns | diameter-limit cut |
| Institutional | Climax or Mature | High-quality timber ² some bulk products (Recreation, etc.) | long-term returns | partial or single-tree selection |

¹ Firewood, sugarwood and pulpwood are called bulk products.
² Sawlogs and veneer quality logs are high-quality timber.
³ A forest in its early development stages.

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Experimental Woodlot Improvement Program Underway in Huntingdon County

By
Richard A. Lord

Last February's issue of the *Journal* reported on a study of farm woodlot ownership and management in south-western Quebec. The report concluded that, particularly in Huntingdon County, much could be done to make these woodlands more productive and profitable once a knowledge of sound forestry principles and techniques was made available to the owners.

Since last June, a program designed to offer this type of information and assistance has been offered in Huntingdon County. Made possible by the support of the Quebec-A.R.D.A., the program is being carried out by the Department of Woodlot Management of Macdonald College. The following article describes this project in the light of an increased recognition throughout Eastern Canada of the need for assistance programs which will ensure the most profitable utilization of farm woodlands.

Regardless of whether your woodlot looks like



this pioneer forest



or this mature forest

you can help us by co-operating in a development program of woodlot management assistance. Interested owners in *Huntingdon County* are asked to contact :

Richard A. Lord
Research Forester
Department of Woodlot Management
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Macdonald College, P.Q.

Within the last year or so a new approach to farm forestry has been introduced in many parts of the country. Ontario, Quebec, New Brunswick and Nova Scotia have all undertaken programs designed to offer increased assistance in the management of privately owned woodlands. In some cases provincial government foresters are advising owners on the proper management techniques and practices; in others, direct assistance is available in the

form of marking timber to be cut and providing free reforestation services. Some of the programs provide for payment of a direct cash subsidy for improvement work carried out by the owner on the recommendation of qualified foresters.

In Ontario, the new Woodlands Improvement Act is intended to rehabilitate 7,800,000 acres of private forest land, including 2 million acres of idle land requiring planting and 5,800,000 acres of woodlands requiring silvicultural treatment and management. The Act intends to encourage owners who are normally reluctant to carry out such non revenue-producing activities by reducing the long term investment in three planting and woodland improvement.

The participating owners sign an agreement with the Provincial government which details a mutually acceptable management program to be carried out over a period of years. Where reforestation is required the owner purchases the planting stock at a cost of \$10.00 per acre, and the Department of Lands and Forests carries out and assumes the cost of planting. If the owner prefers to do the work himself, he will be paid for his time and labour. Non-commercial improvement work, that is thinning or weeding operations in existing stands where the products removed are not merchantable, will be carried out by personnel of the Department, or the owner will be paid a cash subsidy if he prefers to do the work himself.

Several programs are underway in Nova Scotia. These include technical assistance and advice to woodlot owners in the location of roads, thinning and clearing procedures, tree planting and harvesting, and fire prevention. One such program will establish financial incentives for owners to improve the condition of their lots through silviculture practices. Owners complying with a one year management program involving a minimum of ten acres of woodlot are to be entitled to a cash grant or subsidy. Another trial project is principally concerned with promoting the formation of an association of woodlot owners. Such an association would serve as a vehicle providing the organizational and educational facilities needed to enable owners to obtain the maximum benefits from their woodlot operations. In New Brunswick, both a Woodlot Stand Improvement program and a Reforestation program have been undertaken. These programs offer a combination of management assistance and subsidies to encourage improved management of woodlands and reforestation of idle lands.

Quebec has recently embarked on a

pilot silviculture project to improve farm woodlots in the lower St. Lawrence. The five year project is designed to achieve optimum management first by appropriate maintenance and improvement work and then by reasonable cutting and operating procedures. Qualified foresters will give the farmers an annual work program and check the results each year. If the work has been properly done the farmer will receive a per-acre cash subsidy for a maximum of five acres per year over the five year period.

All of these programs have several points in common. They recognize the need for greater production from the vast farm woodland resource not only to make this section of the farm economy more profitable to the owners, but also to insure a supply of raw material for the mills. This in turn increases employment and benefits the area as a whole. The key to this situation is the profit incentive for the woodlot owner. These programs are designed to increase that profit incentive and to show the owner how this can be achieved.

The Huntingdon project is another example of this approach. It is designed to help the owner obtain the greatest benefit from his woodlot by advising him on the best method of cultivating, on when and how to harvest his crop, and on where to find the most profitable market for his products.

Underlying this approach is the concept that the woodlot must be considered not as an operation separate from the rest of the farm enterprise but as an integral part of the owner's whole farm economy. When his field crops fail to produce the expected yields, when his dairy cows dry up or become sick, or when his apples are small and diseased, the modern farmer attempts to find the cause. He turns to the county agronomer, the pomologist, or the agriculture college to learn the reasons and to find a remedy. Now the same sort of help is available to the farmer who wants to increase his yields from his woodlot. This recently introduced program, presently limited to a single county, is designed to provide this service. When the recommended improvements require only the expenditure of time and labour, the owner will be assisted in the planning and carrying out of such work by a qualified forester. When expenditures of capital are required, as in reforestation or road building, attempts will be made to subsidize the costs involved. In all cases, participation in the program is voluntary. Furthermore, it is left to the owner to decide what he wishes to do in, or with, his woodlot and then to assist him in implementing a program

designed to accomplish his objectives.

There is another aspect of the Huntingdon project. By inviting the participation of interested woodland owners, we are in effect asking these owners to assist us in an experimental research project designed to test the effectiveness and value of particular silvicultural treatments. During the program woodlots will be periodically inventoried to determine precisely the quantity and quality of wood present, the rate of growth, increase in quality and value, and the return to the owner. Through his co-operation in the program the owner not only receives the benefits of professional assistance but also contributes to the work of the College in endeavouring to make farm forestry more profitable.

Work in Huntingdon got underway in mid summer following acceptance of the proposal by Quebec-A.R.D.A. The initial step was to publicize the program as widely as possible in the selected area, and to invite interested owners to participate. At the same time the co-operation of related agencies, including the County agronomer, and the Extension Department of Macdonald College was solicited. Their generous co-operation has been made available.

Even as responses from interested owners were being received the second phase of the operation was underway. This involved an intensive and detailed survey of all potential markets for woodlot products. All known mill operators and purchasers of roundwood located within a 50 mile radius of the County were visited and information on species, quantities and prices was obtained. The results of this market survey are available to woodlot owners to help them find the best market for their products.

During the fall of 1966 the writer began contacting owners who had expressed an interest in the project. Initially these visits served to acquaint the owner with the details of the program and to advise the field worker of the owner's intentions. In some cases the owner was interested in some specific problem related to the woodlot; more often the approach centred around the place of the woodlot in the whole farm economy. Discussions were held with the owner with respect to the overall farm enterprise, and the extent to which the woodlot formed a part of that enterprise. The next step consisted of a general inspection of the wooded areas of the farm and the preparation of a plan of management based on the owner's interests. The type of plan developed varies widely from owner to owner. Gradually once all owners have been provided with this initial serv-

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Morgan Arboretum —

MAPLE RESULTS IN 1966

by J. D. MacArthur

One of those rare, but welcome, bumper crops of maple syrup was produced in 1966. High yields were reported from all around the maple country. Some people were even worried about over-production and falling prices. The Morgan Arboretum maple operation was no exception with a total production of 512 gallons of syrup or 1.67 pounds of sugar per taphole. As usual much work was done on experiments and tests with methods of sap collection. We hope this report on results may prove useful to others.

Experience, in 1965 particularly, led to the decision to start tapping in the Morgan Arboretum by February 15. Too many early March runs of sap have been missed in the past. In 1966 earlier tapping gave us an extra 100 gallons of top quality syrup during the first week of March. From now on we will not risk missing that early run. It can turn bad years into average ones and boost an average year to good. There is nothing to lose and, in some years, a real bonus may be gained.

Taphole Sanitization

All 1966 tapholes were treated with paraformaldehyde pellets because a 1965 experiment had shown that sanitization greatly increased sap yields. When pellets are used early tapping is possible without risking early "drying up" of tapholes. Several experiments in the U.S. have shown that tapholes bored and pelleted in February produced clear sap until April 15; two months later. Pellets also reduce the contamination of sap by micro-organisms and syrup quality is better. Early tapping, later "drying up", and better syrup are all advantages that can be obtained at low cost through taphole sanitization.

Vacuum Pumping (Experiment A)

For several years vacuum pumping of sap has been under study. In a 1965 test on a 450-tap system, with 18-inch drops and vacuum pumping, sap yield per taphole was more than double that from buckets and spouts in other groves. It was therefore suspected that the use of drops, for the first time, had given the marked increase in yield. But this was not certain. Since drops cost about 15 cents each, this called for careful checking.

So in 1966, the same 450-tap grove was split into two 225-tap set-ups; one with 18-inch drops on each tap and the other not. (Figures 1 & 2). Each tree had either one or two drop taps and one or two non-drop taps, depending upon its size. Two pumps were installed, one on each system, and run by the same motor. (Figure 3). Yield records showed that the drop system produced 6.6 gallons of sap per taphole versus 2.7 gallons for the non-drop system during the season. Yield of 6.6 gallons from drops with vacuum pumping was the highest in our 1966 operations. It appears that drops are clearly worth the extra cost. However, the test will be repeated in 1967 to check for seasonal differences that may be important.

1) Drop and non-drop feeder lines both connected to the same tree. An example of the method of installation. 2) Double 1/2-inch main tubing lines with twin 1/4-inch drop and non-drop feeders connected. 3) Twin vacuum pumps, left and right, both powered by the engine in the middle, and 3/4-inch tubing lines to collection tanks. 4) Part of a ten-tree group to compare 18-inch drops with spouts and buckets. 5) Old equipment, a curious child, and the romance of maple. 6) The sugar house as a classroom. 7) A happy ending to one maple story.

Tubing versus Buckets (Experiment B)

In 1966 we obtained a definite answer to the old question about sap yields from tubing and buckets. Doubts have bothered many people who felt that tubing was not as good as the old way. Small scale tests here in the past have indicated that tubing was slightly better so an experiment was made to clear up this point once and for all.

In all 240 trees were used. Each tree had two taps (both pelleted), one having a spout and bucket and the other a tubing-connected 18-inch drop. Sap yields from 24 ten-tree groups were kept separate for tubing and buckets (Figure 4). The average tubing yield was 6.3 gallons per taphole versus 5.0 gallons with buckets and spouts (26 per cent better). The bucket yield was slightly less than the 5.5 gallons per tap recorded for the regular operation of 1850 taps hung with buckets.

Properly hung tubing can therefore be expected to yield better than buckets in volume alone. Moreover, tubing collection is more sanitary, there is less risk of loss by runing over, and later in the season, sap is less exposed to heating than where it remains in buckets awaiting collection.

Early and Late Taps

Some further evidence that taphole sanitization is effective was obtained. On April 2 a fresh tap was bored in each of ten trees that already carried two buckets hung in early March on pelleted tapholes. From April 2 to 18 yields from the unpelleted fresh taps averaged 3.8 gallons against 3.2 for the old taps. In the first week the fresh tap yield was 24 per cent greater than the old but, in the second week yields were practically the same. When the same test was made in 1965, on the same trees but without pellets, the yield from new taps was nine times that from old ones (Table 2).

TABLE 1 — Average taphole gallons of sap from different installations

| Method | No. of taps | Average yield taphole gallons |
|--------------------------------------|-------------|-------------------------------|
| Regular operation Spouts and Buckets | 1850 | 5.5* |
| Experiment A | | |
| 1) Tubing, 18-inch drops, vacuum | 225 | 6.6** |
| 2) Tubing, no drops, vacuum | 225 | 2.7 |
| Experiment B | | |
| 1) Tubing, 18-inch drops, gravity | 240 | 6.3** |
| 2) Spouts and buckets | 240 | 5.0* |

* Yields from spouts and buckets in both regular operations and the experiment were similar.

** Yields from gravity flow and vacuum pumped tubing, both with 18-inch drops, were similar.

TABLE 2 Average taphole gallons of sap from fresh taps and old taps

| Year | Fresh | Old (pelleted) | Old (unpelleted) |
|------|-------|----------------|------------------|
| 1965 | 3.5 | 0.4 | — |
| 1966 | 3.8 | — | 3.2 |

Power Tapping

After another season of testing the battery-powered electric tree tapper it is still in favour. Some good features are :

- 1) Easy carrying.
- 2) Ease of tapping up to seven feet above ground.
- 3) Ease of starting and stopping.
- 4) No motor tuning problem.
- 5) Slow drill speed eliminates risk of heat damage to taphole.

Overnight battery charging permits a day of tapping. A charger is essential and may mean an additional expense but both charger and drill can be useful on jobs other than tree tapping.

Squirrel Damage

Squirrel damage to plastic tubing suddenly became a major nuisance in 1964 and again in 1965. Plans to study this expensive problem in 1966 were washed out by a mysterious absence of any damage. Should this problem crop up again Dr. Roger Bider, wildlife biologist on the College staff, will be prepared for it. Information on squirrel behaviour is needed if we are to foresee and prevent, or reduce, damage. The necessary studies are likely to require much time and effort.

Surplus Syrup — Storage and Sale

More syrup was produced in 1966 than could be sold immediately in the spring. Our solution has been to store the surplus in the Department of Horticulture cold rooms and to offer syrup for sale along with Christmas trees in December 1966. At this time of year many people are looking for an unusual and inexpensive Christmas gift. A pint or quart of maple syrup is a good solution. Others may have used their first supply and need more to carry them over to the fresh crop.

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TROUT PRODUCTION AND LEASING POLICIES IN QUEBEC

*by J. Roger Bider**

A solution is proposed to reconcile the biological and sociological points of view toward fishing rights in the province of Quebec.



In November, the Honourable Gabriel Loubier announced the cancellation of leases of 219 private fish and game clubs. These clubs did not meet the requirements of surveillance of their territories. Adequate surveillance is considered to require a resident game warden from April to December. This, according to the Minister, was to be only the start; as soon as possible all leases were to be cancelled and finally everyone would be allowed to fish where

he pleased. The first reaction to this was that practically everyone not a member of an exclusive fishing club was delighted. Many people could almost taste those myriads of trout they would catch in those newly opened lakes. I for one, however, am not optimistic

* Professor J. R. Bider is Wildlife Biologist with the Department of Woodlot Management, Macdonald College.

about this cure for poor public trout fishing and, according to the latest Quebec Fish and Game Bulletin, neither is the Minister. The Minister seems to be having second thoughts because he has now decided on a "two-year moratorium on leasing . . ." during which there will be no changes in leased areas.

So far, I feel no harm has been done. First of all if the lake is accessible and not adequately protected, it no longer will have any trout in it, and secondly,

if it was not adequately protected and had trout in it, then you can be sure that the lake was not accessible. For these reasons, I would suspect that the Minister's first step of action will do him more good at the election poll than it will do either good or bad to Quebec's trout population. But let us look to the future and assume that eventually all lakes will be made accessible to all fishermen.

From both the biologist's and the "human rights" point of view the new leasing policy was ill-conceived.

The Biological Aspect: Trout is a pioneer species. This means that trout will do best in lakes which have not as yet accumulated much organic matter in their system. Within the species of fish we are familiar with, the brook trout likes the cleanest coolest water, while the rainbow is more tolerant of and will grow faster in warmer lakes and ponds where food is more abundant. A game fish which grows still faster than rainbow trout but prefers still warmer water is the bass, and finally if you have real soupy, warm, green water you might have the ideal conditions for some of the asiatic carps.

Trout productivity is exceedingly low. Everyone knows that rock faces and sand quarries are not very productive pastures, then why should a hundred-acre, crystal-clear lake with rock sides, a sandy bottom and no vegetation be thought of as being a fisherman's paradise?

As fish are cold-blooded animals they do not need a great deal of food just to keep up their body temperatures as cows and men do, so what happens is a proportion of the annual productivity gets tied up into the biomass of the trout population with the result that the weight of fish in a lake is greater than the annual production of fish. This is a key concept so I will make a comparison between three systems: a pasture, a lake and a forest.

The pasture case is purely hypothetical and impractical but is worthwhile to demonstrate the concept. If you were to maintain over an indefinite number of years a herd of cows on a rough Quebec pasture, without ever "cropping" the cows, the area would maintain a constant population of about one 1200-pound cow per 10 acres, or approximately 120 pounds per acre. Under an alternative plan on the same land you could probably carry three stocker calves, increasing their weight by 700 lbs, each in one full year. Therefore, under this second plan the land would be producing roughly 210 pounds of meat per acre per year. This contrast between

maintenance and production shows that when dealing with warm-blooded animals the weight of the animals that are visible on a piece of land is close to the annual production figure for the land. With regard to fertility, if the cattle are never removed and if fertilizer is never added, the chemical nutrients in the system will just get cycled around from beef to plant and back again with perhaps a slight loss due to leaching and erosion.

In a trout lake the whole concept is different. The fish population in an unharvested lake tends to grow to an optimum size which is more often characteristic of the lake than of the species. This is not disastrous because the population of fish has evolved a system whereby as food becomes scarcer, the fish just do not grow as large. Individually this makes no difference to the survival of the fish because they do not have heat loss problems as do warm-blooded animals. A large number of small trout will also make better use of the available food produced in the lake because the food (small insect larvae and microscopic animals, plankton) does not live very long. The general idea is that food must be consumed as soon as it is produced, or else it will die or turn into a flying insect and be lost from the aquatic food chain. Essential mineral nutrients "fertilizers" are continually running through lakes on their way to the sea, and so 1) the fish population ties up some of these chemicals at least temporarily and 2) the lakes perceptibly accumulate organic content from year to year. Thus, they continually and naturally increase in fertility. Trout have a tendency to tie up some of this annual productivity a little like trees do. In other words, all the trout in a virgin lake are not something that represents an annual production, but the sum of many years of production. The weight of the fish in a virgin trout lake represents about ten times the lake's annual productivity.

If we compare this to a woodlot the picture becomes still clearer. About 25 cords per acre can be cut out of a mature virgin spruce forest and yet on a sustained yield basis this represents a production of about .5 cords per acre per annum. Therefore, as in the case of a trout lake we have a larger standing crop (actually 50 times larger) than we have annual production.

Annual productivity of brook trout in lakes runs from a few ounces per acre in large lakes to roughly 20 pounds per acre in a few of our best ponds or lakes. As a result of the biology of brook trout and the productivity of their environment, trout have lost

reproductive resilience. This means that even though there might be up to 200 pounds of fish per acre available to the sportsman, the trout will not bounce back to a favourable population size rapidly, if more than 20 pounds per acre is removed.

From the "human rights" aspect, we naturally feel that Quebec's trout in publicly owned waters belong to the public at large, and not just to a few fortunate private club members. I have said that in order not to over-exploit a lake, only the annual production should be harvested. As this production is very small compared to the number of catchable fish in a lake, exceedingly great restraint and control must be exercised by the individual fisherman.

At first it seems that good sustained management, reconciling both the biological and the human rights points of view would be impossible but this is not the case. It is in fact possible, if a very restricted number of fishermen should be allowed to take out a fixed number of pounds of fish per lake, the latter depending on the productivity of the lake, and also if these fishermen are charged with the responsibility of maintaining the sustained yield.

A solution proposed

The simplified solution to trout fishing in the province is not to open lakes to the public, but: 1) Leave leased areas closed to the freelance fisherman. 2) Calculate the productivity of each leased lake. 3) Establish an equitable maximum allowable number of pounds of fish per year per person (simply the total annual productivity of all leased lakes divided by the number of people wanting to fish in them). 4) Cut back the territories of the present clubs to balance production with permissible harvest limits. 5) Allot (by demand or drawing) the liberated territories to all the fishermen wanting trout fishing on the same productivity basis as the older established clubs.

In this way, if a man or group of men is assigned a lake and if the lake becomes depleted, he should be barred — for the time it would take to repair the damage (10-15 years). All rights should be non-transferable. Under such conditions: 1) the increased number of lessees could well afford to share the costs of protection and 2) as the responsibility for the welfare of the lakes and their future fishing would be in their hands, fishermen would be more prone to resist the temptation of over-exploiting. A system such as this might develop the largest single group of conservationists in the world.



Compiled by T. Pickup of the Information and Research Service,
Quebec Department of Agriculture and Colonization.

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PHOTOGRAPHS BY
OMER BEAUDOIN

MAPLE PRODUCTS 1966

The Agriculture Section of the Québec Bureau of Statistics issues an estimate of the output of maple products in the Province of Québec, listing the categories of maple syrup sold to processors in 1966 and the farm value of the 1965 production. It also includes statistics on production and value for the whole of Canada and the provinces engaged in maple production, Canada's exports, etc.

The estimates for the Province of Québec are based on approximately 5,200 reports completed by producers representing more than 30 per cent of Québec's maple groves. Processors who get their supplies in Québec report the quantity and value of their purchases.

Production

The 1966 output of maple products, expressed in syrup, is estimated at 2,892,000 gallons, compared with 2,046,000 gallons in 1965. The production of syrup reached 2,802,000 gallons and that of sugar produced on farms 434,000 pounds. The Québec contribution to Canadian production for 1966 amounts to almost 90 per cent.

Farm value

The average price for syrup paid to producers in 1965 was \$4.15 per gallon, against \$4.13 in 1964. The average price of sugar was estimated at 56 cents, the same as in 1964. Estimates of the total farm value of maple products in 1965 aggregated \$8,645,000 against \$6,703,000 in 1964 representing an increase of 29 per cent.

The farm value of maple products for 1966 will be published at a later date, when sales figures for the current year are available.

Export

Expressed in syrup, Canada's exports in 1965 reached 1,259,000 gallons worth \$5,629,000 against \$5,038,000 for 1,023,000 gallons in 1964.

The principal importing countries in 1965 were the United States, United Kingdom, and France.



WARNING TO HOUSEWIVES

Dr. Ferdinand Trudel, head of the Veterinary Service of the Department of Agriculture and Colonization, reminds housewives and others that, in order to protect the eater, pork and pork products should be cooked long enough and at a sufficiently high temperature for all parts of the meat to reach 150°F (a temperature that ensures a good margin of safety).

Dr. Trudel points out that every year, especially during the Christmas and New Year festivities, a number of people contract the disease known as trichinosis from eating insufficiently cooked pork infested with the larvae (trichinae) of a parasitic worm. These larvae are contained in cysts in the

muscles of infested animals, particularly pigs.

Investigations of outbreaks have shown that cases of human infestation occur — unfortunately — mainly during the festive season among people who have eaten "tourtières" (pork pies), sausages, rissoles, and other food items made in the home from improperly cooked pork.

Intense and prolonged cold penetrating to the middle of the piece of pork (for example, exposure to a temperature of 5°F for 48 hours) will also destroy trichina larvae.



More aid for farmers

Following a motion by the Minister of Agriculture and Colonization, the Hon. Clément Vincent, the Legislative Assembly passed an emergency measure in December voting additional credits totalling \$1,519,000 to compensate farmers for crop losses caused by drought in the Lower St. Lawrence region, by hail in some counties in the Montreal area, and by wind in Northwest Quebec.

Purchase and transport of hay

Most of the money (about \$1,300,000 of it) will be spent to equalize the price and subsidize the shipment of hay in the counties of Rimouski, Rivière-du-Loup, Témiscouata, Matane, Matapédia, and Gaspé-North which suffered severely from drought in July and August.

As a result of the adverse weather conditions, the combined hay crop in these counties amounted to scarcely 50% of the normal yield; estimates ranging from 68.3% of normal in Témiscouata to only 30.8% in Matane. When calculated on the basis of the 115 parishes which may qualify for assistance, the difference in yield was even greater, ranging from 96.8% to 7% of normal.

At the request of Mr. Vincent and through the mediation of the federal Minister of Agriculture, Mr. J. J. Greene, the federal government has agreed to contribute one third of the transportation costs on condition that the provincial government also pays one



Mrs. E. Larose and her daughters (twins), Françoise and Marguerite, help to stook a good crop of oats at Barraute, Abitibi East.

third. Following personal negotiations with the vice-president of the Canadian National railway, that company has agreed to reduce the cost of shipment by one third.

It is expected that the counties in the central part of Quebec will be able to supply most of the necessary fodder (roughly 150,000 tons or 1½ tons per animal unit in the distressed farmers' herds) out of their normal surplus. Calculations taking Saint-Hyacinthe as the shipping point indicate that Quebec's share of the transportation costs will come to about \$3.85 per ton of fodder.

The Department of Agriculture and Colonization has decided to pay up to \$20 a ton for fodder and resell it to farmers in the above-mentioned counties for \$15 a ton.

Aid for market-gardeners suffering hail damage

A technique described in *Nature* (Vol. 212, p. 602) by Y. Mihara of the National Institute of Agricultural Sciences in Tokyo, provides a way of creating a stable fog. Mihara achieves this by putting a mono-molecular coating on the water droplets, reducing their rate of evaporation.

A compound synthesized by the Japanese from a mixture of oxyethylene docosyl ether and oxyethylene octadecyl ether (called OED for brevity) was mixed in 0.2 per cent concentration with water. This mixture provided a mono-molecular coat of OED on water droplets of 15 micro-metres dia-

meter. At a temperature of 25° C, the coated droplets lasted about 150 times longer than the uncoated ones; as the temperature was lowered the life of the coated drop was increased still further. For instance, at 5°C its life was increased 3000 times, and the artificial fog lasted for 10 hours.

Damage to farm buildings

In Northwest Quebec (Abitibi and Témiscamingue) 104 farmers had property damaged by wind, the total cost being estimated at \$81,664. Following the same procedure as in 1965, the Department's specialists deducted the damage to livestock and rolling-stock and 50 per cent of the amount of the insurance and set the amount of compensation at \$69,000.

□

PRESERVING AN ARTIFICIAL FOG

Fog is generally regarded as a meteorological hazard, but to the farmer or horticulturalist it can be a blessing. It tends to keep away frosts, reduce the rate of evaporation of water from the ground, and lessen the rate of water loss from leaves by cutting down the rate of transpiration. However, attempts to prevent frost on calm nights by making artificial fog have often been unsuccessful because the water droplets in the fog evaporate quickly in the unsaturated air.

In field tests the coated particles were generated with a compressed-air pump, and the heat radiation from the ground was cut to 40 per cent by a layer of coated fog 10 metres thick.

(From "New Scientist")

□

CROP-SPRAYING CHEAPER BY HOVERCRAFT?

The idea of using hovercraft for crop spraying, which has been given some in conclusive examination in Britain, is being taken up seriously by the aerospace and mechanical sciences department of Princeton University. A prototype hovercraft, capable of hovering 2 ft. above the ground, has been built and from experience gained so far its designers are satisfied that a bigger model could give a clearance of 4 ft. (*Aviation Week*, Vol. 85, p. 105).

The new hovercraft, with which experiments are to be made next year, affords a clearance of only 13 in. Its structure weight is 700 lb and it takes 700 lb of payload. A 45 hp Nelson engine drives the fan to create the air cushion, and a similar engine drives the propeller, giving a speed of 45 mile/h. Control in pitch and roll is obtained by manipulating the pleated skirt and there are two rudders behind the thrust propeller for directional control.

Tanks to contain the liquid or pow-

der with which the crops are to be treated are set on racks on each side of the pilot's cabin and the material is sprayed out through nozzles in a semi-circular bar underneath. In tests, little of it escaped from beneath the skirt. The application of the pesticides or fungicide thus appears to be less affected by wind than in delivery from an aeroplane or helicopter.

Stability in yaw (direction) was difficult to obtain in the prototype in crosswinds, although this appears to have been overcome in the new model by fitting a small vertical and flexible sailing at the bow. The cost of the prototype craft was about £7500. When the new type goes into production, it is expected to cost about half as much as an agricultural aeroplane and one quarter the price of a helicopter. Its speed is below that of either class of aircraft.

Work at Princeton is directed by W.T.E. Sweeney, senior research aeronautical engineer, who concludes that clearance height in this type of hovercraft varies with diameter in the ratio

of 8:100. For a clearance of 4 ft, he considers a diameter of approximately 100 ft. will be required. The prototype had a diameter of 20 ft., the new model's diameter is 12 ft.

(From "New Scientist")

□

NEW DIRECTOR

Dr. Ephrem Jacques D.V.M. has been promoted to the post of director of the School of Veterinary Medicine at Saint-Hyacinthe. Announcement of his appointment was made yesterday by the Hon. Clément Vincent, Minister of Agriculture and Colonization.

Dr. Jacques has been assistant director as well as lecturer in bovine surgery, professional ethics, and animal science at the Veterinary School since 1957. Prior to that he conducted a private veterinary practice at Richmond for fifteen years.

Dr. Jacques is also director of the Veterinary School's extension department

□

Quebec's poultry-testing centre

Every year, Quebec imports from other provinces or from the United States about half a million chicks and

thousands of dozens of hatching eggs to meet her poultrymen's demand for laying birds. Quebec hatcheries are thus deprived of an important source of income. In addition, imports of chicks and eggs constitute a risk of spreading diseases, in spite of all precautions.

In order to provide Quebec hatcheries with strains of laying fowl able to compete successfully with American lines and endowed with high egg-pro-

ducing capacity and the ability to convert feed economically into eggs, the Department of Agriculture and Colonization maintains a poultry-testing centre at the Deschambault Agricultural Research Station where the results of cross-matings are placed on trial.

The centre is now conducting trials of laying birds resulting from 17 different crosses. The basic genetic material consists of 5 Leghorn lines that have been reared in Quebec for several years and 4 lines of Leghorn males from the Central Experimental Farm at Ottawa. All the crosses are the outcome of three-way matings involving either three Quebec lines, or a hybrid of two of the Quebec lines mated with an Ottawa male.

Trials of these crosses are carried out in practically the same way as at the Central Experimental Farm at Ottawa except that at Deschambault the birds are kept in complete confinement in a poultry-house equipped with cages.

The Department of Agriculture and Colonization hopes that this poultry trials centre at Deschambault will result in the establishment of well-defined Quebec strains of laying hens, for which there is already a market in Quebec alone amounting to nearly five million birds.

□



Hybrid poultry at the age of twenty weeks on the farm of Mr. Ernest Dugas near Nouvelle, Bonaventure

This page supplied in the interests of the Family Farm by the Quebec Department of Agriculture and Colonization.

Recent events in Saguenay-Lake St. John area

The programme of a visit to the Saguenay-Lake St. John district by the Minister of Agriculture and Colonization, Mr. Clément Vincent, and the associate deputy Minister, Dr Benoit Lavigne, early in the New Year, included the following events:

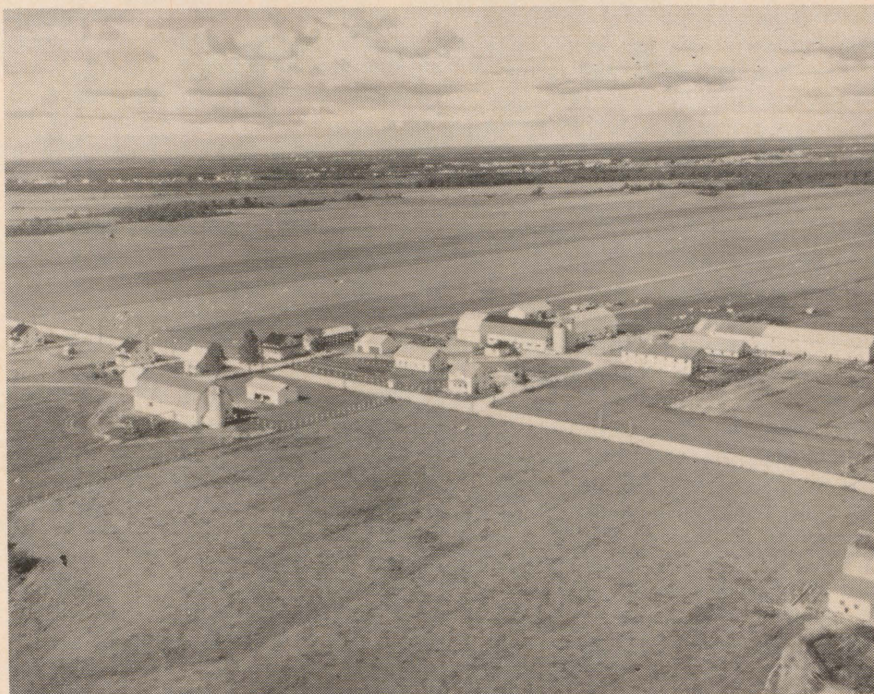
Official opening of the new bulk feed plant of Brassard & Frères Limitée at Chicoutimi on January 10th;

Attendance at the blessing and opening of the new mill of the Chaîne Coopérative du Saguenay at Saint-Bruno on the same day;

Visit to Saint-Prime to greet Mr. Johnny Bergeron and his "famille terrienne de 1966" — the Farming Family of the year.

Visit to Roberval to attend an official reception arranged by the municipal authorities.

□



The farm of Johnny Bergeron and sons (the Farming Family of the Year in 1966) at St-Prime, Roberval

BLACKSPOT

Blackspot is a fungus disease that disfigures and debilitates countless rose bushes every year. At present the only countermeasure is repeated application of fungicidal sprays. Now it seems that plant breeders may have succeeded in overcoming the trouble.

At Beltsville, Maryland, P. Semeniuk and T. Arisumi have managed to double the number of chromosomes in a multiflora rose selection that has the rare trait of resistance to the blackspot fungus. Normally, cross breeding between the multiflora rose — which has 14 chromosomes — and garden roses — which have 28 chromosomes — results only in sterile hybrids. But by doubling the multiflora's complement of chromosomes it should be possible to obtain fertile offspring useful for further breeding experiments.

At Beltsville, out of 54 lateral buds of 18 multiflora seedlings treated with colchicine, one shoot was obtained which had 28 chromosomes per cell throughout the plant tissue. Flowers from this shoot will provide the starting material for blackspot resistance

breeding tests with garden roses. The technique may be used on other 14-chromosome rose species.

A large reservoir of potentially useful traits remains untapped in rose breeding — so far only 9 out of more than 200 known species have provided breeding stock for our garden roses.

(From "New Scientist")

□

MAKING CROPS WASTE LESS WATER

Most plants, often even in conditions of water shortage, use only a small proportion of the water which transpires through their roots, stems and leaves for their own needs. To farmers in hot dry areas water loss through transpiration is a serious economic problem. One experimental method of limiting this loss is the use of sprays which cover over the stomata (the openings in the leaves through which transpired water evaporates). Another is to employ chemicals which are absorbed from the soil by the plant, and which stimulate the plant to reduce the size of the stomata by acting upon the "guard cells" which surround the stomatal openings and normally control the size of the stomata by their expansion or contraction.

D.C. Davenport, of the School of Agriculture at the University of Nottingham, has been experimenting with

the use of phenylmercuric acetate (PMA) in this second way to reduce stomatal aperture and hence transpiration and has achieved remarkable results — for example, a reduction in transpiration rate of 20 per cent for grasses and nearly 50 per cent for lettuces. He considers that the time has come for extensive field trials of chemical anti-transpirants in relation to various crops grown in conditions of water scarcity (*Nature*, Vol. 212, p. 801).

□

FRENCH CATTLE AT GROSSE ILE

A shipment of 216 French breeding cattle is wintering at the Canada Department of Agriculture's maximum security quarantine station on Grosse Ile.

They are bulls and heifers under nine months of age and were brought by boat direct from the quarantine station at Brest, France, to Grosse Ile, an Island in the St. Lawrence River, about 40 miles downstream from Quebec City.

The importation, is made up of 215 Charolais cattle and one bull of the Simmenthal breed.

The cattle will remain in quarantine until next spring.

During the quarantine period, the cattle will be inspected daily and will be given a multiplicity of tests.

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This page supplied in the interests of the Family Farm by the Quebec Department of Agriculture and Colonization.

J. M. MASSICOTTE INDISPOSED

Mr. J. Maurice Massicotte, who is the person chiefly responsible for drawing up the crop insurance plan that the Department of Agriculture and Colonization wishes to establish in the province, was hospitalized in the Montreal Cardiological Institute after suffering a heart attack a few days before Christmas.

Mr. Massicotte, who is 45, was engaged by the Quebec government in 1965 to make a thorough study of crop insurance. Following the publication of his findings in a preliminary report in July 1965, a committee was appointed to study crop insurance and submitted its final report at the beginning of 1966.

Since then, Mr. Massicotte has worked unsparingly to complete the crop insurance plan which the government hopes to table in the Legislature as soon as the session resumes so that the farmers may start to benefit from the protection provided by the plan this season.

The Minister of Agriculture and Colonization, the Hon. Clément Vincent, has stated that thanks to Mr. Massicotte's hard work the plan will not be delayed.

Before entering the government's service, Mr. Massicotte worked for nearly thirty years with general insurance companies. Among the executive posts he has held are the following: assistant provincial manager for the Canadian Indemnity Company; provincial manager for the General Security Insurance Company of Canada; and superintendent of the Provident Assurance Company of Canada. He is an active member of l'Institut d'Assurance de la Province de Québec and has served on a number of the insurance industry's committees, notably the one on fire insurance rates in the province.



SYNTHETIC PYRETHRIN

Patents in no fewer than 50 countries have been applied for by the National Development Research Corporation to protect its interest in one of the most promising projects it has been involved with. The object of this attention is something that chemists have been trying to achieve for years — a formula for a synthetic substance with the desirable qualities of natural pyrethrin — which, among other things, is one of the most effective ingredients of fly sprays.

The dried flowers of a daisy-like plant — a type of pyrethrum — is the source of natural pyrethrin. It is relatively expensive and it has therefore been more or less confined to industrial and domestic use. Its two great virtues are that it is harmless to mammals and

possesses a most effective "knock-down" capacity; flies are instantly paralyzed. Another characteristic is that it does not persist, becoming inactive within a few hours, especially in light. This makes it useless where greater stability is required but against a background of growing fears about insecticides which persist in the soil for years, this deficiency is beginning to look like a virtue.

There have been various efforts to develop synthetic pyrethrins and some are being marketed, but by and large they have been disappointing. There is little point in a synthetic pyrethrin if it is not cheaper than the natural product and at least as effective.

Three years ago Dr. Michael Elliot of Rochamsted experimental station secured the help of the NRDC with a promising line of research which is now bearing fruit. Dr. Elliot and his team have made what appears to be a breakthrough in the search for synthetic pyrethrin, with a substance closely related to natural pyrethrin but a good deal cheaper. Toxicity to mammals is minimal, it is twice as active against mosquitoes and its relative effectiveness against house flies is even greater.

At present the new synthetic pyrethrin is only produced on a laboratory scale. Development of an industrial process will be left to such chemical manufacturers as are interested, and options have already been taken by companies in America, Japan and Britain.

The news may well initially upset the grower countries — mainly Kenya, Tanzania, Ecuador, the Congo and New Guinea — but it is unlikely that they will have much to worry about. Probably each product will find its own special field of application, with the cheaper synthetic pyrethrin likely to become attractive to the horticultural grower who hitherto has not considered the natural product an economic proposition.

(From "New Scientist", London)



NEW MEAT INSPECTION SERVICE IN QUEBEC

The Hon. Clément Vincent, Minister of Agriculture and Colonization, announces plans for the expansion and improvement of Quebec's already existing meat inspection service. On January 1st 1967, a complete ante- and post-mortem inspection service were added to it.

This new service is offered to owners of abattoirs and packing plants who want to take advantage of it and

This page supplied in the interests of the Family Farm by the Quebec Department of Agriculture and Colonization.

are prepared to meet its requirements. It will involve the use of a special Quebec Approved stamp.

Establishments making use of the service will be subjected to continuous inspection by veterinarians in order to ensure the wholesomeness of products leaving their premises for human consumption.

In particular, the new service will enable the inspected products to be sold on the Montreal and Quebec markets which, starting on April 1st 1967, will be closed to meat from animals that have not been inspected before and after slaughter.

Further information may be obtained from Dr. Ferdinand Trudel, Director of the Food Hygiene Service. Telephone: Quebec 693-2477.



MINISTER OF AGRICULTURE AND COLONIZATION AND STAFF VISIT SITE OF EXPO 67

Speaking to members of the staff of his Department who visited the construction sites of Expo 67 as a group recently, Mr. Clément Vincent, Minister of Agriculture and Colonization, said that the international exhibition would result in an expanded market for farm products and that was why the agricultural ministry attached so much importance to it.

Mr. Vincent was accompanied by the deputy minister, Mr. Roméo Lalonde and the associate deputy minister, Mr. Benoit Lavigne; the heads of services, divisions and local administrative offices; county agricultural representatives, veterinarians, agricultural engineers and others, all of whom will become spokesmen for Expo 67 in whatever part of Quebec their duties take them to.

Mr. Vincent pointed out that, because of the large number of people from other countries who will visit Montreal next year, Expo 67 will be an outstanding publicity medium for Quebec's exportable agricultural products such as maple syrup, cheese, apples, blueberries, and purebred livestock.

"But," he added, "the beneficial effect of the exhibition in the field of agriculture imposes on us a very pressing obligation in return — namely the duty of doing everything possible to improve the quality of our products in order to give the millions of visitors who will flock to Canada next year a good impression of Quebec agriculture."

Mr. Vincent also asked his staff to urge farmers in their areas to take part in the farm beautification contest which is being held in connection with Expo '67, so that Quebec will really become "La belle province".



THE BETTER IMPULSE

News and Views of the Women's Institute of Quebec

HEMMINGFORD TREES FOR EXPO PAVILIONS

Small towns *do* have an important share in Canada's International Fair, and Hemmingford is one example. Mr. Victor Rugenius, who has a landscaping business in Hemmingford, was approached some time ago about supplying trees for Expo. He agreed, and truckloads of assorted trees have been moving from local bushes to the Fair grounds.

The Canadian Pavilion, which represents the whole of Canada with obtain 90% of its trees here: the Indian and the Maritime Pavilions which form part of the Canadian Pavilion will get all their trees here, using cedars, red maples, pines and others. To date the Austrian pavilion has been supplied with pines to be planted in a diamond pattern, and pruned to a uniform nine inches when landscaping is completed.

Choice of Hemmingford for this venture was made because there is a good selection of different varieties of trees, in this area, because it is near the Fair site, because Mr. Rugenius understands the needs, and because local farmers have cared for their bushes and the trees are reasonably easy to get out. The trees are dug, then "balled and bagged". This means the roots are encased in hessian then transported and planted without the roots being further disturbed—bag and all. This work will go on all winter as the trees are dormant, and the earth around them frozen. Hemmingford residents are pleased that they can contribute something of beauty to the Fair.

(Mrs. J. L'Esperance and
Mrs. J. Robertson)
Hemmingford WI



HANDICRAFT SALE FWIC NATIONAL CONVENTION 1967

1. TYPE: Handicrafts and miscellaneous articles of good quality, typical of the province or locality, if possible. NO PERISHABLE GOODS.
2. PRICE: Articles which can be priced from \$1.00 to \$3.00 are most desirable. These are readily sold to delegates and visitors. The price to be attached by the province or maker. It is understood that the price may be changed, if found necessary.
3. QUANTITY: Each province to make its own decision on the number of articles to be contributed.
4. DATES: Articles to be sent from April 1, 1967 to May 31, 1967
5. SEND TO Mrs. E. V. Thompson,
R.R. #3,
Guelph, Ont.
6. INSURANCE: Insurance on the collection will be carried by the Federated Women's Institutes of Canada from April 1, 1967, until after the Convention the end of June.

These articles are contributed by the different provinces and sold to help defray the cost of the Convention.



1016 CHRISTMAS STOCKINGS

Dear Members of the Institutes:

What a wonderful bit of work you did this past year — 1016 stockings from the Quebec Women's Institute — and they were all lovely! You are certainly sending in stockings that really could be shown in any of our department stores; so gay and with such darling decorations on them. We had a grand total of 1487 to send abroad. It is a nice feeling to think of the children

you made happy.

We have a sweet story from our Korean worker — a little boy was walking around with something clenched in his fist for several days. When asked what he had he showed her a bright red marble. She could 'look at it, but not touch it'. It was the first thing he had ever had that was truly his very own.

(more overleaf)



Presentations by Belvedere WI at their 50th birthday party. Mrs. Ken Smart, (Left) the president, presenting cheque to Mrs. G. Armstrong of the Wales Home. On the right Miss Thelma Crawford, Lennoxville High School, holding cheque for Miss Joanne E. Edwards, now attending Bishop's University.

When you see what our children have it is hard to believe.

Wouldn't it be nice if we could increase the number of stockings this, our Centennial Year!

I want to wish you a belated Happy New Year and congratulate you on something well done.

Sincerely yours,

Mrs. John B. Lewis

Christmas Stocking Convenor

The Canadian Save the Children Fund
Quebec Committee



Winter Thoughts

Short days,
Long nights;
Bitter cold —
T'ain't right;
Should have summer
Year through;
Warmth and happiness,
Buttercups and dew.
I only wish —
It could come true.

—Phyllis Sisco
Publicity Convenor,
Stanstead County

MAPLE SYRUP SPECIALIST

Macdonald graduate, Walter A. Humphreys, is Ontario's first Maple Syrup Extension Specialist with the Ontario Department of Agriculture. Born in Montreal, he farmed for a while at Dunham, Brome County, before joining the staff of the Farm Products Inspection Service in Northern Ontario.

Mr. Humphreys' appointment reflects Ontario's new interest in maple syrup production. At present, only one million of the province's 17 million trees are tapped annually, representing less than 10% of the Canadian output. Last year's increase returned an extra million dollars to the producers.



MAPLE RESULTS —

(concluded from page 9)

Our 1966 experience has shown that there is a demand around Christmas time. Fifteen per cent of our 1966 production was sold in December 1966. Sales are worthwhile. When syrup is sold along with Christmas trees the overhead is low and this market could probably be developed.

Educational Sugar House

Through the assistance of several firms in the maple business a fully equipped educational sugar house was operated in the Morgan Arboretum in 1966. Groups of children, usually school classes, learned how maple sap is collected and syrup made. The sessions ended with each child enjoying what is variously called sugar on snow, taffy, *la tire*, depending upon local custom.

A section of sugar bush near the educational sugar house was used as a museum (Figure 5). Old-fashioned wooden buckets and spouts, different kinds of metal buckets and spouts, and the latest types of plastic equipment for sap collection were hung to show the history of sap collection. After the outdoor demonstration the groups then saw how maple sap is converted to syrup by evaporation (Figure 6). Explanation was combined with demonstration with a tasting session (Figure 7) to complete the story. Interest in this project was strong from the start and heavy traffic is expected in the education sugar house and bush in 1967.

In 1967

Past work will be followed up in 1967. Early tapping with pellets is now standard practice in Morgan Arboretum. The drop and non-drop with vacuum pumping test will be rerun; different lengths of drops will be compared; if possible squirrel damage will be studied, and the educational project will be enlarged. We hope to have some more useful results to report by next year and join you in hopes for good sap weather in our Centennial Year.

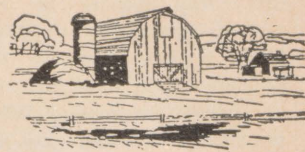


The antique display at Belvedere WI's 50th anniversary, Mrs. A. E. McGee, Life Member, in charge. The quilt was made by a member's mother, completely by hand around the year 1885, and contains approximately 6,770 pieces. The lining was dyed by steeping fallen leaves.



Belvedere WI's 50th birthday party, showing some members in period costume. Seated from the left are: Mrs. F. Moorehouse, Mrs. F. Paige, Mrs. F. McGee, only living charter member, Mrs. K. Smart, president, Mrs. J. Ossington Provincial President, Mrs. C. Drummond. Standing: Mrs. G. Montgomery, Mrs. L. Povey, Mrs. C. Pitman, Mrs. F. Tarte, Mrs. A. Blowfield, Mrs. J. Tarte, Mrs. W. Bell, E. Smith, Miss M. Kinkead, Miss H. McGee, Mrs. E. McGee (Missing from picture is Miss E. Beaton).

The Month With The W. I.



HAPPY MONTH IN ALL WI BRANCHES

Christmas activities were undertaken in all our branches and the festive season was enjoyed by all. There were parties for members, for families, for children, for the community: there was singing and music: there were gifts for the shut-in, the ill and the needy: there was joy — and with it hope for the coming year.

Here are some novel Roll Calls: Belvedere responded by describing a Christmas custom of some other land: Brompton Road answered by donating an ornament for the Christmas Tree: Matagami said Merry Christmas in some language other than their own: Black Cape gave a recipe for Christmas Cooking: Jerusalem-Bethany told how each one could spread some Christmas joy: and Lochaber answered that Christmas means to me. A Contest was held at Bury in which members had to identify Christmas Carols, with a member at the piano, playing the first stanza. Fordyce remembered the true meaning of Christmas with a quiz on the New Testament. It was a happy month in all our branches.



ABITIBI EAST: Matagami members have been assisting at a local project by donating and serving lunch to workers on the new ski hill; held successful card party; donated to both school libraries; purchased a large coffee percolator for use at special events; laid wreath at the Legion Armistice Service; donation to UNICEF; Mrs. Cloutier and Mrs. Ducker played Santa Claus at their Christmas meeting, with exchange of gifts.

ARGENTEUIL: Arundel held discussion on feasibility of holding Adult Education classes in the school during winter months. **Brownsburg** recalled fond memories of past Christmas days: entertained Senior Citizens at a special Christmas party. **Dalesville-Louisa** gave gifts to Orange and Protestant Home: entertained **Lachute** branch. **Frontier** will plant flowering crab tree on the

grounds of the Museum at Carillon, as soon as the weather conditions are right, as a Centennial project; donated to "Lampada" at High School; donation to needy overseas children. **Jerusalem-Bethany** members participated in program of skits, and specially enjoyed a song-and musical number in which 3-over-70 ladies took part. Morin Heights members each brought a guest; sent gifts to "forgotten patients" at Douglas Hospital. **Pioneer** enjoyed visit of County President, Mrs C. Hall; donated to UNICEF, and to Library Fund of Home and School Association, to Montreal Children's Hospital, and to Students Council at High School; cookies and candy sent to Retarded Children's School in St Andrew's East, with Mrs. Ross Hyde, a member, giving a party for those boys who were in residence over Christmas; 2 contests conducted by Mrs J. Brass. **Upper Lachute East End;** sing-song of Christmas Carols with guitar accompaniment by Mrs L. Hume. **BONAVENTURE: Black Cape** named a United Nations Country, and collected for UNICEF; paper by Publicity Convener on "Growth and Value of Women's Organizations; CAC achievements read and discussed; donated to UN Seminar Student Fund, and Northern Extension Fund; sold 50 boxes UNICEF Christmas cards; received a letter and picture from their foster child; mourn the loss by death of their member, Mrs. John Sinclair. **Casapedia** placed wreath on cairn; prizes given to students at St. Jules Convent and New Richmond High School, and Christmas treats for children under 10. **Marcil** welcomed a new member; will assist serving of hot lunches at Shigawake-Port Daniel school during winter: two members selected to assist at the ceremony for presentation of the Canadian Flag at the same school; two members went as delegates to Remembrance Day ceremony at New Carlisle; collected for UNICEF.

BROME: Abercorn: Bursary for 1965-66 was won by William Andrusiak of

Sutton High School; other school prizes given; presented picture of Diamond Rock Stove to Brome Country Museum; enjoyed visit of County President. **Knowlton's Landing:** card party so successful that more will be held; bake and recipe sale held. **South Bolton** members read a Christmas story or poem as roll call. **Sutton:** President, Mrs. G. Patten, just returned from an extended trip, displayed a wide collection of polished stones, and other souvenirs: Christmas Party held at Richford, Vermont, where Sutton Members were guests of the Home Demonstration Unit there for dinner.

CHATEAUGUAY - HUNTINGDON: Dundee sent used clothing to Unitarian Service Committee. **Hemmingford:** Mrs. A. Churchill, dietician, gave a talk on Food, and importance for variety and change in day-to-day menus; gave school bursary.

Howick: demonstration on Christmas decorations made from plastic bottle caps, tin cans, newspapers etc, and then sprayed with gold paint; Christmas story told by Mrs. M. Greig. **Huntingdon:** Mrs. Havorka gave talk on her native Czecho-slovakian Christmas customs; prize given for most originally wrapped parcel; donated to Quebec Service Fund. **Ormstown:** Guest, Mrs. J. Wallace gave a Christmas reading; Mr. C. Crant, of Grant's Bakery, gave demonstration and talk on the icing of fancy cakes; jams and jellies sent to local hospital; bale of clothing sent to Salvation Army; welcomed a new member.

COMPTON: Brookbury sold Christmas seals; held bridal shower. **Bury** welcomed FIVE new members; most interesting demonstration on making Christmas decorations from pine branches and cones. **Canterbury** donated to Maplemount Home, Northern Extension, sent gifts to Military Hospital and to St. Paul's Rest Home, Bury; held stork shower for member. **Cookshire:** talk on Junior Red Cross work in the high school, by Connie Matthews; are

sponsoring an adopted child; donated to Dixville and Maplemount Homes; interesting papers by conveners on various topics — ways and means to feed hungry nations, challenge of human rights, detection, and treatment of cancer, interesting WI programs to encourage old and new members, projects for clean-up and beautification of Canada; silent sale held. **East Angus** named their favourite radio and TV programs and why; Mrs. Hayes read article on measles; Mrs. Labonte read from Federated News re inter-provincial picnics; Mrs. Knapp told of her recent trip to France and Spain; donated to Maplemount Home; collected for UNICEF and sold cards. **East Clifton** donated to Lady Aberdeen Scholarship Fund. **Sawyerhill** has repaired Compton County WI Book and put it in the Museum; held Tupperware party for benefit of branch; Mrs. Cora Austin, their oldest member, died at the age of 101, a few days before her birthday. **Scotstown** sent gifts to Colstock WI in England, and to the Wales Home; slides shown of trip to Europe and across Canada by member's daughter; sold many souvenir spoons; clipping read of the Argenteuil WI trip to Ontario.

GATINEAU: All branches sent delegates to County meeting, and excellent interesting reports were brought back to each branch. All helped serve tea at Ottawa Winter Fair, on Gatineau Co. day. **Aylmer East** celebrated with a 41st Birthday Cake; held panel discussion on changes in the school system. **Breckenridge** donated to children's Halloween party; placed wreath at Cenotaph in Quyon. **Eardley** also placed a wreath there; Mrs. C. Faris told of personal experiences during war years in England; donated to Hoodless Home. **Rupert** named a Cabinet Minister and his portfolio; collected for UNICEF; quiz on 1867-1967. **Wakefield:** Miss Mary Ann Penner, teacher, told of experiences teaching in Anzac, an Indian village in Northern Alberta; for roll call said a sentence in French. **Wright** enjoyed visit of County President, Mrs. D. O'Grady; contest was a citizenship quiz.

MEGANTIC: **Inverness** exchanged Christmas gifts. **Kinnear's Mills** made and wore a Christmas corsage; brought a recipe for "something good for Christmas". Both sent gifts to shut-ins and to children.

MISSISQUOI: **Cowansville** held short talks and discussions on the need for peace and goodwill in the world of to-day; on regulations governing accurate labelling of cans, on use of mulch on plants, on "imitation" milk, and the quantities of food sugar as opposed to artificial sweeteners: letter read

from our "Link Institute" in England: silk quilt donated by a member; sale of articles yielded proceeds which were given to School for Retarded Children. **Fordyce** enjoyed contest on Christmas and a quiz on the New Testament.

PAPINEAU: **Lochaber** answered roll call with "What Christmas Means to Me": plants sent to senior members, and cards to former members.

PONTIAC: **Beechgrove:** demonstration on making articles with Ceramic Tile, by WI member; held successful Bazaar and Tea; were hostesses for Pontiac Semi-Annual Convention. **Bristol:** Reverend Snowdon was guest speaker; saw a film on Jewish People: bought UNICEF cards; sold poppies and placed wreath on Cenotaph: travelogue on trip to Alaska and Western Canada: helped on hospital cart in Pontiac Community Hospital. **Clarendon:** slides of the US were shown by a member: project completed is the making of a large quilt a replica of a quilt made in the early 1800's, for a lady in Pennsylvania — many many hours went into this interesting project. **Fort Coulonge** heard readings and remembrances appropriate to Nov. 11 and contributed to wreath for Cenotaph. **Quyon** held quiz on Canada; donated to Oxygen tent at Pontiac Community Hospital, to Anti-TB Association and to Coupon #367; sponsored Halloween collection for UNICEF. **Shawville** heard talk on the new Mathematics; laid wreath on Cenotaph; money apron a success; books donated by the high school were collected by the WI and sent on to distribution point in Montreal to be further distributed.

QUEBEC: **Valcartier:** recent euchre party was most successful financial venture; members bought UNICEF Christmas cards; donated to Quebec Service Fund; two minutes silence observed in memory of two valued members who died in the same month, Mrs Eva Pageau, Life Member, and Mrs Ella Monaghan, Convener of Agriculture; gifts sent to Verdun Protestant Hospital, and to local retarded child.

RICHMOND: **Cleveland** held contest on rolled and dropped cookies, won by Mrs R Healy and Mrs C Pease: cookies were then gift-wrapped and sent to WI members in the Wales Home: each member contributed to a program with quiz, games and readings, making an enjoyable afternoon. **Denison's Mills** held bingo party, with proceeds going to UNICEF; special collection for Pennies for Friendship; as Centennial project each member is to plant a tree; quilt blocks turned in. **Gore** brought gifts for veterans. **Melbourne Ridge:** Mrs K Stevens, County President was guest; contest held on the best-wrapped present with prizes going to Mrs J Hawker,

and Mrs W Nelson: gifts and candy given to pre-school children. **Richmond Hill** held a contest on "the cent", with prizes to Mrs Goodhue and Mrs W Bailey; sent gifts to Dixville Home, as did **Richmond Young Women**. **Spooner Pond** held contest on best wrapped Christmas gift with prize to Mrs H Blanchard; article on Women's position as "Caretaker" in many areas of life; sent gifts to 2 "forgotten children" at Dixville, and will continue to do so throughout the year; observed birthday of their oldest member Mrs. A. Coddington, with a presentation of a gift and serving of birthday cake made by Mrs Rodgers.

ROUYN-NORANDA: **Farmborough** completed Christmas Stockings for overseas: gave donation toward beautifying their local cemetery. **Noranda** laid a wreath at the Cenotaph. **Rouyn** brought in knitted articles for gifts; held and auction sale at their meeting; had a travelling apron to raise funds. All branches cooperated in holding a Bake sale.

SHEFFORD: **Granby West** held an educational contest; gave Christmas boxes to under-privileged children at High School. **Waterloo-Warden:** card parties are held in homes, the proceeds will be used to pay the branch's share of Highway signs; guessing game contest.

SHERBROOKE: **Belvedere** presented to Mrs Charles Drummond who has been a member for 45 years; report of County meeting held in November with Belvedere branch entertaining was given by the delegate; donated to Quebec Service Fund, Coupon #367 and to local school. **Brompton Road** held contest on homemade Christmas ornament, won by Mrs E Dedoteau and Mrs H McLeod; worked at cancer dressing station and brought gifts for cancer patients. **Lennoxville:** each member told of historical and interesting place they had visited, which seemed like a trip around the world in one meeting; article read on why to wear a poppy, and the use to which the Poppy Fund is put: donated to Maplemount Home, Coupon #367, Pennies for Friendship; presented FWIC pin to member who is going away; held Halloween tea and sale; donated gifts to cancer patients.

STANSTEAD: **Ayers' Cliff:** Mr Wayne Little, local constable, was guest speaker, with question and answer period on civic matters; instructions for making Christmas decorations given; gifts for Maplemount children. **Hatley:** as roll call gave an idea to celebrate Centennial: donated to Unicef and to Armistice wreath: interesting paper by convener of citizenship, Mrs Bray, on the meaning and aims of UNICEF. **Hatley**

Centre: member who attended Leadership course gave an interesting talk on same; spelling bee held; Mystery parcel sale held with proceeds to Pennies for Friendships; card party held with proceeds to go toward Centennial project; donated high school prizes. **Stanstead North:** Miss Hortense Cowles was guest, speaking on Medicine in past years, and telling about 3 of the local doctors of the past, one of whom was her grandfather: roll call was an idea to amuse a convalescent child; successful rummage sale held; birthday party held for Miss Mary Flint, member who recently lost a limb and is confined to wheel chair; a moment of silence observed in memory of the Late Mrs. Homer Curtis, one of the organizers of this branch; guessing game held "What's in the Bag" won by Mrs E Hill. **Tomifobia:** the members of the Cercle de Fermieres of Stanstead were guests, as well as two English guests; who were greeted by the president in both English and French: Mrs Lowell Naeve of Hatley Centre assisted by her 2 children, gave demonstration on making Christmas wrapping paper by painting with aniline dyes on newsprint.

VAUDREUIL: Harwood enjoyed a pleasant evening under convener of Music and Art, Mrs T Smith: group of paintings by members was displayed and old-fashioned sing-song enjoyed; cigarettes sent to Veterans in Ste Anne's Military Hospital; membership taken out in Vaudreuil County Museum Assn; shower of cards for hospitalized member; candy sent to School for Retarded Children.

GASPE: Douglastown donated gifts to mental patients; have organized groups to entertain children at the Mental Hospital; held successful card party.

Gaspé brought gifts which they delivered to aged persons in the local San; 2 large food baskets sold to raise funds.

York brought gifts for hospitalized children, with Santa on hand; chose a candidate to run as Carnival Queen, this to be sponsored by the County; branch helped with old-fashioned dinner to commemorate York's 100th birthday with the hall appropriately decorated, lighted by oil lamps and candles, with waitresses charming in their dresses of olden days, and a display of articles used by our ancestors on stage.

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EXPERIMENTAL —

(continued from page 7)

ice more detailed work will be undertaken. This will include intensive surveys of volume of timber present, the rate of growth, the increased growth as a result of improvement work and the

returns to the owner for the time and effort he has put into his woodlot.

It might be worthwhile to review briefly some of the particular situations which have developed. One of the problems reported by several owners was a difficulty regarding the export of wood to mills in the United States. This difficulty has been looked into in discussion with both U.S. and Canadian Customs officials and the problem has been found to be less serious than originally believed. The required custom forms can be completed with little red tape or delay. Although most of the movement of wood across the border is in the other direction, there are, in some cases, advantages in marketing wood on the American side. Cedar is one product which those located close to the border may be able to sell at a greater advantage in the U.S.

In another instance the marketing study conducted at the start of the program proved valuable to at least one owner. Planning to cut-over several acres of his woodlot for pulpwood, he discovered that the young second growth hickory which was abundant in the stand was marketable at a much higher price in seven foot bolts as dimension stock for sporting equipment. The sale of this high value product not only provided the owner with the money he required, but served to thin the stand and improve the growth on the remaining trees.

Another owner is considering whether it would be more feasible to market his thinnings as fire place wood in Montreal, rather than as pulpwood. Although the idea and the decision in his own, we can help him by providing information on such questions as transportation costs, and possible retail outlets.

Not all owners who participate in the program will benefit as directly or as immediately. In most instances the first step will be an improvement cut intended to remove less desirable species and individuals which restrict the growth of more valuable trees. On some other farms it might be desirable, for example, to partially cut a cedar grove

for fence posts in order to keep cattle from grazing in a valuable young maple stand.

The program will also be concerned with all aspects of the maple syrup industry. Owners who wish to expand their operation; or who are considering purchasing new equipment will be offered help on deciding the best method or type of equipment required. Ultimately, producers associations might be formed to encourage co-operative effort. Sometime in the future such an association might consider the value of central evaporation as a means of reducing costs and keeping the small sugar bush owner in the business.

Now such program can guarantee the woodlot owner greatly increased production and profit from his woodlands. But it can help him to increase the rate of growth, to harvest at the best time and to find the most profitable market for his products.

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PRIVATE FOREST —

(continued from page 5)

time for woodlot management).

It would be nice to think that the majority of owners between these extremes are treating their forests with the care that such a renewable natural resource demands. Unfortunately, they are not. Private forests, under reasonable management, could provide a stable and continuing supply of wood to help meet the growing needs of forest industry as well as increased income to the owners. At present these privately-owned forests are suffering as much at the hands of the owner who cuts without thought or plan for the future as they do from the suburban owner who may not cut a tall.

Excessive cutting is widespread

Consider the findings of the Eastern Quebec Planning Bureau who reported in 1964 for the Gaspé pilot region that nine per cent of the forest land was in farm-owned woodlots. This forest was producing close to 18 per cent of the total cut from the region. The Bureau further reported that these farm forests are being cut at the excessive rate of 25 cubic feet per acre per year, as compared with the calculated present potential growth on similar cut over lands in Montmagny County of only 14 cubic feet per acre per year (Dorion, 1964).

Lord (1965) suggests in a study of woodlot owner attitudes in south-western Quebec that "little consideration is given to sustained yield or to future production. Clear cutting, high-grading, and pasturing are common. These detrimental practices combine to reduce the owners' chances to gain any continuing benefits from their woodlots."

(more overleaf)



**Naturalflow Maple Sap Plastic Tubes
& Supplies Ltd.**

St. Emile de Montcalm, P.Q.



Woodlot following a diameter-limit cut. Note the many vigorous, well-formed trees left for future harvests.



Harvest of high-quality sawlogs following partial cutting in a mature woodlot.



A woodlot recently cut using the clear-cut system. Note the quantity of low-quality wood harvested in such an operation; width of strip is equal to the height of the trees in the stand.

This situation is not unique to the province of Quebec. Fingland (1964) reports that in some of the eastern counties of Ontario, "cutting . . . is as much as 400 per cent of the calculated allowable amount, and in the area as a whole, cutting is up to twice the annual growth." Seheult (1964) reports a similar situation exists in New Brunswick.

Practical Management Research

In an effort to accommodate forest harvesting methods to more effectively meet the diverse needs of these owners, the Department of Woodlot Management at Macdonald College established in 1960 three management research areas in the Morgan Arboretum. These areas include woodlots that typify the different forests held by many farm and non-farm owners. Realistic management objectives have been set up for each of these woodlots. Cutting systems are planned to harvest the products of these forests in a way that will best meet the various owners' objectives. These are classified in the table entitled: Management Prescriptions.

Thus, the "marginal" farm owner who of necessity must cut back his forest heavily is inevitably holding a pioneer forest. Clear-cut strips are the best management method to handle such a forest and meet the owner's immediate needs for current income. The Arboretum trials using this treatment suggest the possibility of a 15 to 20 year interval between successive harvests, from the same acre and a definite improvement in species composition following strip clearcutting.

The "commercial" owner who may depend on his woodlot for some part of his annual income can generally cut more conservatively than the marginal owner. He is thus more often holding a woodlot which lies somewhere between the pioneer and the mature or climax forest. A diameter-limit cut based on tree species and vigour in relation to the market situation are used to determine the harvest trees in this woodlot. Trees above specified diameters ranging, for example from 11 to 16 inches depending on individual tree species and vigour, decides the cut-or-leave trees. Thus, a low-vigour tree of inferior species 11 inches in diameter or larger would be cut, whereas a high-vigour tree making fast growth of the same species would not be cut until it was 16 inches or larger. More desirable species from the market viewpoint, etc. would not be marked for cutting until even larger diameters are reached. The diameter-limit system is felt to be an effective way to meet this owner's product objectives and income needs.

The "institutional" owner (either farm or non-farm) most frequently

holds a climax or mature forest. Because of his better income position he can afford to wait and invest in his forest, build it up for future high-quality timber production, manage it for maple syrup production, or even plant trees. A single-tree selection or partial cutting system will in general best meet these goals in the tolerant hardwood forests of southern Quebec. Enhancement of recreation and aesthetic qualities are also dividends from this type of management.

It is too much to expect that these management proposals will satisfy every owners' needs. Nevertheless results to date show sufficient promise to suggest that this realistic approach to woodlot management will help meet the divergent demands of suburban and rural forest owners and stimulate additional wood production from private forest lands.

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